## AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (currently amended): A control apparatus of an ~~engine, comprising:~~ engine comprising:

a crank angle detector detecting a reference crank angle for each stroke phase difference between cylinders; and

a control unit that receives a detection signal of said crank angle detector, updates a cylinder discrimination value based on a previous cylinder discrimination value, and outputs a control signal for each cylinder based on said cylinder discrimination value,

wherein said control unit is arranged to detect a reverse rotation of said engine,

wherein said control unit is configured to detect whether fuel in said engine is burned during the reverse rotation of the engine, and

wherein said control unit prohibits the outputting of said control signal for each cylinder based on said cylinder discrimination value, ~~when said engine is rotated in reverse and also fuel is burned in said engine during said reverse rotation.~~ upon detection of burning of the fuel during the reverse rotation of said engine.

2. (currently amended): A control apparatus of an engine according to claim 1, further ~~comprising;~~ comprising:

a unit crank angle detector outputting a detection signal at each unit crank angle,

wherein said control unit measures a period of detection signal from said unit crank angle detector, and detects the reverse rotation of said engine based on a change in said period.

3. (original): A control apparatus of an engine according to claim 2, wherein said control unit detects the reverse rotation of said engine based on a ratio between the newest value and a previous value of said period.

4. (currently amended): A control apparatus of an engine ~~according to claim 1, further comprising;~~ comprising:

a crank angle detector detecting a reference crank angle for each stroke phase difference between cylinders;

a control unit that receives a detection signal of said crank angle detector, updates a cylinder discrimination value based on a previous cylinder discrimination value, and outputs a control signal for each cylinder based on said cylinder discrimination value; and

a rotation speed detector detecting a rotation speed of said engine,

wherein said control unit prohibits the outputting of said control signal for each cylinder based on said cylinder discrimination value, when said engine is rotated in reverse and also fuel is burned in said engine during said reverse rotation, and

wherein said control unit judges that the fuel is burned, when the rotation speed of said engine detected by said rotation speed detector during the reverse rotation of said engine reaches a threshold or above.

5. (currently amended): A control apparatus of an engine according to claim 4, further ~~comprising;~~ comprising:

an engine temperature detector detecting a temperature of said engine,

wherein said control unit sets said threshold based on the temperature of said engine detected by said engine temperature detector.

6. (currently amended): A control apparatus of an engine ~~according to claim 1, further comprising;~~ comprising:

a crank angle detector detecting a reference crank angle for each stroke phase difference between cylinders;

a control unit that receives a detection signal of said crank angle detector, updates a cylinder discrimination value based on a previous cylinder discrimination value, and outputs a control signal for each cylinder based on said cylinder discrimination value; and

a rotation angle detector detecting a rotation angle of said engine,

wherein said control unit prohibits the outputting of said control signal for each cylinder based on said cylinder discrimination value, when said engine is rotated in reverse and also fuel is burned in said engine during said reverse rotation, and

wherein said control unit judges that the fuel is burned, when the rotation angle of said engine detected by said rotation angle detector during the reverse rotation of said engine reaches a threshold.

7. (currently amended): A control apparatus of an engine according to claim 6, further ~~comprising;~~ comprising:

an engine temperature detector detecting a temperature of said engine,

wherein said control unit sets said threshold based on the temperature of said engine detected by said engine temperature detector.

8. (original): A control apparatus of an engine according to claim 1, wherein said control unit stops the update of said cylinder discrimination value when said engine is rotated in reverse.

9. (currently amended): A control apparatus of an engine ~~according to claim 1, further comprising;~~ comprising:

a crank angle detector detecting a reference crank angle for each stroke phase difference between cylinders;

a control unit that receives a detection signal of said crank angle detector, updates a cylinder discrimination value based on a previous cylinder discrimination value, and outputs a control signal for each cylinder based on said cylinder discrimination value; and

a cylinder discriminating signal output device outputting a cylinder discriminating signal at each reference crank angle,

wherein said control unit prohibits the outputting of said control signal for each cylinder based on said cylinder discrimination value, when said engine is rotated in reverse and also fuel is burned in said engine during said reverse rotation, and

wherein said control unit switches from the update process of cylinder discrimination value based on the cylinder discriminating signal output from said cylinder discriminating signal output device to the update process of cylinder discrimination value based on the previous cylinder discrimination value, when judging a failure of said cylinder discriminating signal output device.

10. (original): A control apparatus of an engine, comprising:

crank angle detecting means for detecting a reference crank angle for each stroke phase difference between cylinders;

cylinder discrimination value updating means for updating a cylinder discrimination value based on a previous cylinder discrimination value, at each time when said reference crank angle is detected by said crank angle detecting means;

control means for outputting a control signal for each cylinder based on said cylinder discrimination value;

reverse rotation detecting means for detecting a reverse rotation of said engine;

burning detecting means for detecting whether or not fuel is burned during said reverse rotation of said engine detected by said reverse rotation detecting means; and

control for each cylinder prohibiting means for prohibiting the outputting of control signal for each cylinder based on said cylinder discrimination value by said control means, when it is detected by said burning detecting means that the fuel is burned in said engine during the reverse rotation.

11. (original): A control method of an engine, comprising the steps of:

detecting a reference crank angle for each stroke phase difference between cylinders;

updating a cylinder discrimination value based on a previous cylinder discrimination value, at each time when said reference crank angle is detected;

outputting a control signal for each cylinder based on said cylinder discrimination value;

detecting a reverse rotation of said engine;

detecting the burning of fuel during said reverse rotation of said engine; and

prohibiting the outputting of control signal for each cylinder based on said cylinder discrimination value, when the fuel is burned in said engine during the reverse rotation.

12. (original): A control method of an engine according to claim 11, wherein said step of detecting the reverse rotation of said engine comprises the steps of:

outputting a detection signal at each unit crank angle;

measuring a period of detection signal at each unit crank angle; and

detecting the reverse rotation of said engine based on a change in said period.

13. (original): A control method of an engine according to claim 12, wherein said step of detecting the reverse rotation of said engine based on the change in said period comprises the steps of:

calculating a ratio between the newest value and a previous value of said period; and

detecting the reverse rotation of said engine based on a result of comparison between said ratio and a threshold.

14. (original): A control method of an engine according to claim 11, wherein said step of detecting the burning of fuel during the reverse rotation of said engine comprises the steps of:

detecting a rotation speed of said engine; and

judging that the fuel is burned, when the rotation speed of said engine reaches a threshold or above.

15. (original): A control method of an engine according to claim 11, wherein said step of detecting the burning of fuel during the reverse rotation of said engine comprises the steps of:

detecting a temperature of said engine;

setting a threshold based on the temperature of said engine;

detecting a rotation speed of said engine; and

judging that the fuel is burned, when the rotation speed of said engine reaches said threshold or above.

16. (original): A control method of an engine according to claim 11, wherein said step of detecting the burning of fuel during the reverse rotation of said engine comprises the steps of:

detecting a rotation angle of said engine; and

judging that the fuel is burned, when the rotation angle of said engine reaches a threshold.

17. (original): A control method of an engine according to claim 11, wherein said step of detecting the burning of fuel during the reverse rotation of said engine comprises the steps of:

detecting a temperature of said engine;

setting a threshold based on the temperature of said engine;

detecting a rotation angle of said engine during the reverse rotation of said engine; and

judging that the fuel is burned, when said rotation angle reach said threshold or above.

18. (original): A control method of an engine according to claim 11, further comprising the step of;

stopping the update of said cylinder discrimination value when said engine is rotated in reverse.

19. (original): A control method of an engine according to claim 11, further comprising the steps of:

outputting a cylinder discriminating signal at each reference crank angle;

updating a cylinder discrimination value at each reference crank angle based on said cylinder discriminating signal;

judging an abnormality of said cylinder discriminating signal;

prohibiting the update process of cylinder discrimination value based on said cylinder discriminating signal; and

switching to the update process of cylinder discrimination value based on a previous cylinder discrimination value, when the update process of cylinder discrimination value based on said cylinder discriminating signal is prohibited.